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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,336	05/10/2001	John Edward Archibald JR.	MLX9-2000-0045-US1	7375

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EXAMINER

MANOSKEY, JOSEPH D

ART UNIT PAPER NUMBER

2113

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/853,336

Applicant(s)

ARCHIBALD ET AL.

Examiner

Joseph Manoskey

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-6, 10-15, 20, and 23-29 is/are allowed.
- 6) ☒ Claim(s) 7, 8, 16-19, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 9 is objected to because of the following informalities: On the last line of claim 9 is reads "the user data in the parity data". It is believed this should read "the user data and the parity data". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claims 7 and 8 recite the limitation "the new DCCps" in line 2 of both claims.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 16, 18, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffy in view of Surugguchi et al., WO 99/38067, hereinafter referred to as "Surugguchi".

7. Referring to claim 16, Duffy teaches a data storage system that includes a host computer coupled to a plurality of data storage devices (See Fig. 1). Duffy also discloses a data checking technique performed on user data in one or more data sectors distributed across a plurality of disks, a parity sector for the user data, and both data sectors and the parity sector having respective headers (See Fig. 2). Duffy does not teach the system being able to offer different levels of data consistency, however Duffy does disclose the system including both parity information in a parity drive and data check code with each sector in the system. Surugguchi discloses a RAID controller that can configure a drive to a number of different RAID levels (See Col. 2, lines 33-36). It would be obvious to one of ordinary skill in the art at the time of the invention to combine the multiple levels of RAID of Surugguchi with the RAID system of Duffy. This would have been obvious to one of ordinary skill in the art at the time of the invention to do because it allows the complex configuration of a RAID controller to be done without the user having knowledge required to do it (See Surugguchi, Col. 2, lines 6-10).

8. Referring to claim 18, Duffy and Surugguchi teach all the limitations (See rejection of claim 16) including the data consistency checking technique including a third code being the XOR of all the check codes stored in the parity sector which allows for performing a consistency check without respective operations on each byte of data (See Duffy, Fig. 2).

9. Referring to claim 21, Duffy discloses a program on a computer for performing a data consistency checking procedure for a system with a data distributed across data storage devices, parity data, and each sector having a header (See Fig. 1 and 2, and Col. 5, lines 27-65). Duffy does not teach the system being able to offer different levels of data consistency, however Duffy does disclose the system including both parity information in a parity drive and data check code with each sector in the system.

Surugguchi discloses a RAID controller that can configure a drive to a number of different RAID levels (See Col. 2, lines 33-36). It would be obvious to one of ordinary skill in the art at the time of the invention to combine the multiple levels of RAID of Surugguchi with the program on the computer for performing a data consistency checking procedure of Duffy. This would have been obvious to one of ordinary skill in the art at the time of the invention to do because it allows the complex configuration of a RAID controller to be done without the user having knowledge required to do it (See Surugguchi, Col. 2, lines 6-10).

10. Referring to claim 22, Duffy teaches an apparatus comprising a first communication link coupling the apparatus to a computer, a second communication link coupling the apparatus to a plurality of storage devices (See Fig. 1). Duffy also teaches the apparatus containing a processor for executing a program for data consistency checking procedure (See Fig. 1 and Col. 5, lines 27-65). Duffy does not teach the system being able to offer different levels of data consistency, however Duffy does disclose the system including both parity information in a parity drive and data check code with each sector in the system. Surugguchi discloses a RAID controller that can configure a drive to a number of different RAID levels (See Col. 2, lines 33-36). It would be obvious to one of ordinary skill in the art at the time of the invention to combine the multiple levels of RAID of Surugguchi with the apparatus of Duffy. This would have been obvious to one of ordinary skill in the art at the time of the invention to do because it allows the complex configuration of a RAID controller to be done without the user having knowledge required to do it (See Surugguchi, Col. 2, lines 6-10).

11. Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duffy and Surugguchi in view of Johnson et al., U.S. Patent 6,219,800, herein after referred to as Johnson.

12. Referring to claim 17, Duffy and Surugguchi teach all the limitations (See rejection of claim 16) except for only performing the data consistency checking if there is data in the sector that has been modified since a last data consistency check.

Johnson discloses a RAID system that uses bit vector to indicate which stripes are "dirty" and is in need of a parity update (See Col. 3, lines 28-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the "dirty" bit vector of Johnson with the data consistency checking method of Duffy and Surugguchi. This would have been obvious to one of ordinary skill in the art at the time of the invention to do because it allows the parity updates to be delayed until the disk is idle (See Col. 3, lines 23-27).

13. Referring to claim 19, Duffy, Surugguchi, and Johnson teach all the limitations (See rejection of claim 17) including the data consistency checking technique including a third code being the XOR of all the check codes stored in the parity sector which allows for performing a consistency check without respective operations on each byte of data (See Duffy, Fig. 2).

Allowable Subject Matter

14. Claims 1-6, 10-15, 20, and 23-29 are allowed.

Response to Arguments

~~15. Applicant's arguments, see page 16 of amendment, filed 26 July 2004, with~~
respect to the drawings and specification have been fully considered and are
persuasive. The objection of the drawings and specification has been withdrawn.

16. Applicant's arguments, see page 16 of amendment, filed 26 July 2004, with respect to claims 7-9 have been fully considered and are persuasive. The objection of claims 7-9 has been withdrawn.

17. Applicant's arguments, see pages 16-21 of amendment, filed 26 July 2004, with respect to claims 1-9, 12-15, 20, and 23-29 have been fully considered and are persuasive. The 35 U.S.C. 102(b) rejection of claims 1-9, 12-15, 20, and 23-29 has been withdrawn.

18. Applicant's arguments, see page 22-25 of amendment, filed 26 July 2004, with respect to claims 10 and 11 have been fully considered and are persuasive. The 35 U.S.C. 103(a) rejection of claims 10 and 11 has been withdrawn.

19. Applicant's arguments, see pages 25-26 of amendment, filed 26 July 2004, with respect to the rejection(s) of claim(s) 16-19, 21, and 22 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Surugguchi, WO 99/38067.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Manoskey whose telephone number is (703)


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308-5466. After approximately October 13, the examiner can be reached at the new Alexandria telephone number, (571) 272-3648. The examiner can normally be reached on Mon.-Fri. (8am to 4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (703) 305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JDM
October 7, 2004


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